

CLAIMS:

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A joining assembly comprising:
 - a first conduit member for receiving and sealingly joining a second conduit member, the first conduit member comprising:
 - a central longitudinal axis;
 - a generally radially extending conduit end surface;
 - a first inner conduit surface extending generally parallel to the central longitudinal axis from the conduit end surface to a radially outward end of a second inner conduit surface;
 - the second inner conduit surface extending generally radially from the first inner conduit surface to a third inner conduit surface;
 - the third inner conduit surface extending generally parallel to the central longitudinal axis from the second inner conduit surface to a fourth inner conduit surface;
 - the fourth inner conduit surface extending generally radially from the third inner conduit surface to a fifth inner conduit surface;
 - the fifth inner conduit surface extending generally parallel to the central longitudinal axis from the fourth inner conduit surface to a sixth inner conduit surface;
 - the sixth inner conduit surface extending generally radially inwardly from the fifth inner conduit surface;
 - seventh inner conduit surface extending generally parallel to the central longitudinal axis from the sixth inner conduit surface;
 - wherein the third inner conduit surface has a first portion proximate the second inner conduit surface and a second portion remote from the second inner conduit surface;
 - an annular gasket member comprising:
 - a first gasket surface extending generally radially and abutting against the fourth inner conduit surface;
 - a second gasket surface extending generally parallel to the central longitudinal axis and corresponding to the fifth inner conduit surface;

a third gasket surface extending generally radially and corresponding to the sixth inner conduit surface;

a fourth gasket surface extending generally parallel to the central longitudinal axis and abutting against the second portion of the third inner conduit surface;

a fifth gasket surface extending generally radially inwardly towards the central longitudinal axis from an end of the fourth gasket surface opposite from the first gasket surface; and

a sixth gasket surface extending from the fifth gasket surface to the third gasket surface, wherein the sixth gasket surface comprises a sealing member extending radially inwardly;

an annular retainer member comprising:

a first retainer surface extending generally parallel to the central longitudinal axis and abutting against the first inner conduit surface;

a second retainer surface extending generally radially inwardly from the first retainer surface and abutting against the second inner conduit surface;

a third retainer surface extending generally parallel to the central longitudinal axis and abutting against the first portion of the third inner conduit surface;

a fourth retainer surface extending generally radially inwardly from the third retainer surface and corresponding to the fifth gasket surface;

wherein the retainer member is fixed to the first conduit member at the second retainer surface; and

wherein the gasket member is locked against axial movement in a direction towards the end conduit surface by the fourth surface of the retainer member and wherein the gasket member is locked against axial movement in a direction away from the end conduit surface by the fourth inner conduit surface of the conduit member.

2. The joining assembly as defined in claim 1 wherein the first conduit member is plastic.

3. The joining assembly as defined in claim 2 wherein the retainer member is plastic.

4. The joining assembly as defined in claim 1 wherein the first conduit member is made of a plastic material selected from the following: polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), acrylonitrile butadiene styrene (ABS), polyethylene (PE) and polypropylene (PP).

5. The joining assembly as defined in claim 4 wherein the retainer member is made of a plastic material selected from the following: polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), acrylonitrile butadiene styrene (ABS), polyethylene (PE) and polypropylene (PP).

6. The joining assembly as defined in claim 5 wherein the second retainer surface is fixed to the second inner conduit surface by an adhesive material.

7. The joining assembly as defined in claim 6 wherein the adhesive material is selected from the following: PVC cement, methacrylate adhesive and cyanoacrylate adhesive.

8. The joining assembly as defined in claim 5 wherein the second retainer surface is fixed to the second inner conduit surface by a method selected from the following: ultrasonic welding, heat welding and spin welding.

9. The joining assembly as defined in claim 6 wherein the sixth inner conduit surface comprises a sixth inner conduit surface recess, and
wherein the sixth inner conduit surface recess is adapted to receive the third gasket surface.

10. The joining assembly as defined in claim 9, wherein the sixth inner conduit surface recess is recessed to accommodate deformation of the gasket member during insertion of the second conduit member into the joining assembly.

11. The joining assembly as defined in claim 6 wherein the fourth inner conduit surface comprises a fourth inner conduit surface recess,
the first gasket surface comprises a first gasket surface protrusion, and
wherein the fourth inner conduit surface recess is adapted to receive the first gasket surface protrusion.

12. The joining assembly as defined in claim 11 wherein the fourth inner conduit surface recess is recessed to accommodate deformation of the gasket member during insertion of the second conduit member into the joining assembly.

13. The joining assembly as defined in claim 12 wherein the retainer member comprises a chamfered, angled or rounded radially-inner edge adjacent to a plane defined by the generally radially extending end conduit surface.

14. The joining assembly as defined in claim 6, wherein the retainer member has a retainer end surface extending generally radially from an end of the first retainer surface opposite from the second retainer surface;
the end retainer surface defines a first plane;
the generally radially extending conduit end surface defines a second plane; and
wherein the first plane and second plane are substantially coincident.

15. The joining assembly as defined in claim 6, wherein the fifth gasket surface comprises a fifth gasket surface protrusion, and the fourth retainer surface is recessed to receive the fifth gasket surface protrusion.

16. The joining assembly as defined in claim 6, wherein the fourth retainer surface comprises a fourth retainer surface protrusion such that only the fourth retainer surface protrusion is the only portion of the fourth retainer surface that abuts against the fifth gasket surface.

17. The joining assembly as defined in claim 16, wherein the longitudinal cross-section the forth retainer surface protrusion has a square shape.

18. The joining assembly as defined in claim 16 wherein the fourth retainer surface protrusion has an annular surface that is not a single plane, but is intermittent so as to provide less surface area in contract with the fifth gasket surface.

19. The joining assembly as defined in claim 6 wherein the third retainer surface has zero longitudinal length.

20. The joining assembly as defined in claim 6 wherein each of the second retainer surface and the second inner conduit surface has zero radial length.